A NEW TROGLODERUS FROM THE AEOLIAN SALINE DUNES OF SOUTHERN CALIFORNIA

(Notes on North American Coleoptera, No. 15)

By Charles S. Papp

The Tenebrionid genus *Trogloderus,* which is one of the most interesting paleo-entomological groups of rare beetles, has been treated by Ira La Rivers (1942). The generic relationship in comparison to some of the closely related genera also were discussed by him (1948). In another paper La Rivers (1946) modified the specific value of all species known at that time, and except for *costatus* LeC., he sank all into subspecific rank. His excellent discussion and evaluation of concrete facts and theoretical ideas concerning the evolution of this remarkable Tenebrionid is a must for those who are engaged in the study of our deserts. Here is an example of an insect, entirely bound to the ground, with some special and as yet unknown processes of complete adaptation to the great environmental changes that have occurred. This genus could be used as a stepping stone to a greater understanding of the evolutionary processes through the ages.

The geological past of this area often has been discussed by several authors (Van Dyke 1932, Spieth 1950, Jaeger 1955, 1957). The old fauna probably appeared during the Oligocene or Early Miocene, when possibly a broader connection between North and South America existed, as a route for the migration of species of the southern fauna. Then, when the climate became cooler and the once flat land began to rise, a great change took place in this territory. The species of warmer origin were exposed to great climatic stress. Those that survived began to change in habits and also in form. Many of them, however, such as the phytophagous forms, could not survive so well, and they gradually disappeared. These environmental changes have been frequently discussed, but first hand information, ("on the spot" observations) of this fascinating problem is needed to understand all those dramatic events which give our deserts their thousand faces. The writings of Jaeger (1957, etc.) and Spieth (1950) are highly recommended to those concerned with North American deserts.

Sporadically there are a few reports (other than those of La Rivers, cited earlier) on *Trogloderus* from the southwestern United States. Most recently Papp and Pierce (1960) reported the collection of fairly large numbers of this rare beetle in stored

chicken feed in the high desert area of Mojave. These were *T. costatus tuberculatus* Blaisd., collected in September 1958. I did not have the good fortune to observe other specimens before or since, until I received a large number of beetles (99% Tenebrionids) from Dr. W. W. Mayhew, Assistant Professor of Zoology, University of California, Riverside, Calif. These beetles had fallen into his traps that were set for desert reptiles in the aeolian saline sand dunes near Dale Dry Lake, San Bernardino County, in the Lower Mojave Desert. This interesting habitat is very seldom visited by collectors. It is a highly arid portion of the Mojave Desert approximately 22 miles east of the desert town of Twenty-nine Palms. In this material the writer found 6 specimens of *Trogloderus,* collected on October 16th, 1960. Another two specimens were picked up with other trapped Tenebrionids by Mayhew's coworkers (Walter Moberly and Betty Aaron) on December 23rd, 1960 at the same location. No *Trogloderus* were found in all the trapped material Dr. Mayhew obtained from other areas of the desert (Palm Springs and Algodones Dunes). After careful study of these specimens, I found this group to be new to science and will describe it below. There is now one species (*T. costatus LeC.*) and four subspecies (including this new one) known to science, and all are members of the fauna of North America (Papp, 1961-a).

Trogloderus costatus **mayhewi** Papp, new subspecies (Plate 11). — It is easily recognized by its black color, strongly developed longitudinal ridges on the elytra and by its broad pronotum. — The Head is slightly wider than long, very coarsely, irregularly granulate. The transverse impression of the vertex deep at base; on the deepest anterior edge very finely at the shallower posterior edge very coarsely granulate. The central elevation with rough granulation is slightly divided by an irregular short groove. The pre-ocellar edge widely rounded, labial margin slightly curved, heavily granulated. Eyes small, deeply set and partially covered by the end of the transverse groove of vertex. — Pronotum as wide (♀) or wider (♂) than the elytra on its widest point. Lateral margin evenly rounded, slightly wider behind middle, more or less evenly annulated; the annules somewhat sharp and each annule with a short but strong black seta (which can not be indicated on the enclosed illustration). Anterior angles sharp, pointed, with a deeply set anterior, and with a more or less even posterior margin, with a short but sharp posterior angles. Sides broad, almost flat, very coarsely granulated; just before the elevated center portion begins with large irregularly shaped impressions with sharp and shiny edges. The elevated portion similarly but somewhat finely granulated, with a shallow transverse impression, which occasionally in deeper in its posterior end. — Elytra as wide (♂) or slightly wider (♀) than the pronotum, with four prominent

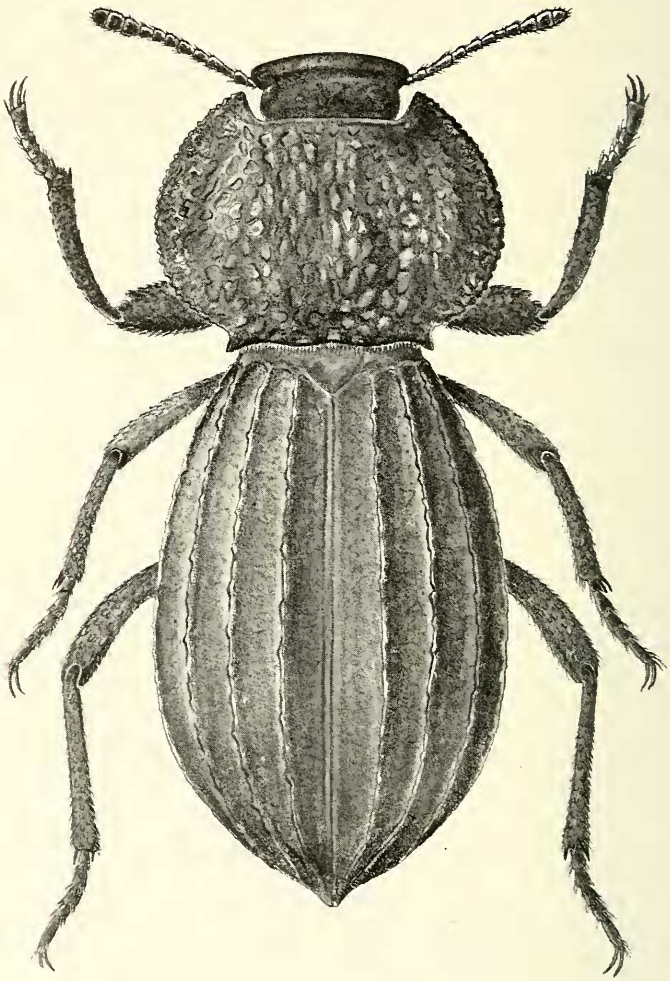

PLATE 11

Trogloderus costatus mayhewi Papp, new subspecies.
(Drawing by the author)

longitudinal ridges, from which the two external costa shallow, the others gradually higher toward the middle of the elytra, the fourth is the highest. All the ridges are continuous, shiny, slightly uneven in their longitudinal line. The caudal ends shallow and are individual endings. The intercostal spaces are sharply concave, more or less opaque, with a very slim remains of shallow punctures, which are hardly visible on some specimens. There are no setae present.— Legs, especially the anterior pair, roughly granulate, the others smoothly punctulated, all on their ventral side with golden, sharp setae. The profemora with a blunt tooth, the protibiae with a broad tooth dorsally and with two narrower ones ventrally. — Abdomen flat, somewhat concave, sides smoother, other parts finely granulated and sporadically covered with short golden yellow setae. — Length: Males 8.0-11.7 mm., Females 9.5-13.5 mm.

Locality: Dale Dry Lake, southern San Bernardino County (the lower Mojave Desert area), California. Six specimens were collected on October 16, 1960, two specimens on December 23, 1960. The area was generally discussed in another paper (Papp, 1961-b) in connection with the description of a new *Saprinus*. — Type (male) deposited in the type collection of the Department of Entomology, Los Angeles County Museum, Los Angeles, Calif.; female specimen deposited at the same place. — Paratypes: One specimen in the collection of the Division of Life Sciences, University of California, Riverside, Calif.; one specimen in the British Museum (Natural History), London, England; one specimen in the Rijksmuseum van Natuurlijke Historie, Leiden, Nederland; one specimen in the collection of the Swedish Academy of Sciences, Rijksmuseum, Stockholm, Sweden.

Specimens of *Trogloderus costatus tuberculatus* Blaisd. also have been sent to the above mentioned institutions, plus the Museum Georg Frey, Tutzing bei München, Germany.

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